Known and Probable Human Carcinogens

Many people worry that substances or exposures in their environment may cause cancer. As part of the American Cancer Society's role in informing and educating people about cancer and its possible causes, this document provides lists of substances and exposures that are known or suspected to cause cancer. The lists below have been developed by two highly respected agencies – the International Agency for Research on Cancer (IARC) and the US National Toxicology Program (NTP). Some related information is included on how these and other agencies and groups test and classify possible carcinogens.

The American Cancer Society does not keep detailed information on each of the exposures on these lists. If you are looking for more in-depth information on a particular item on these lists, please refer to the agencies in the "Additional resources" section.

What is a carcinogen?

Cancer is caused by changes in a cell's DNA – its genetic "blueprint." Some of these changes may be inherited from our parents. Others may be caused by outside exposures, which are often referred to as *environmental factors*. Environmental factors can include a wide range of exposures, such as:

- Lifestyle factors (nutrition, tobacco use, physical activity, etc.)
- Naturally occurring exposures (ultraviolet light, radon gas, infectious agents, etc.)
- Medical treatments (radiation and medicines including chemotherapy, hormone drugs, drugs that suppress the immune system, etc.)
- Workplace exposures

- Household exposures
- Pollution

Substances and exposures that can lead to cancer are called *carcinogens*. Some carcinogens do not affect DNA directly, but lead to cancer in other ways. For example, they may cause cells to divide at a faster than normal rate, which could increase the chances that DNA changes will occur.

Carcinogens do not cause cancer in every case, all the time. Substances labeled as carcinogens may have different levels of cancer-causing potential. Some may cause cancer only after prolonged, high levels of exposure. And for any particular person, the risk of developing cancer depends on many factors, including how they are exposed to a carcinogen, the length and intensity of the exposure, and the person's genetic makeup.

How do researchers determine if something is a carcinogen?

Testing to see if something can cause cancer is often difficult. It is not ethical to test a substance by exposing people to it and seeing if they get cancer from it. That’s why scientists must use other types of tests, which may not always give clear answers.

Lab studies

Scientists get much of their data about whether something might cause cancer from lab studies in cell cultures and animals. There are far too many substances (both natural and man-made) to test each one in lab animals, so scientists use what is already known about chemical structures, results from other types of lab tests, the extent of human exposure, and other factors to select chemicals for testing. For example, they can often get an idea about whether a substance might cause a problem by comparing it to similar chemicals that have already been studied.

Although lab studies alone can't always predict if a substance will cause cancer in people, virtually all known human carcinogens that have been adequately tested also cause cancer in lab animals. In many cases, carcinogens are first found to cause cancer in lab animals and are later found to cause cancer in people.

Most studies of potential carcinogens expose the lab animals to doses that are much higher than common human exposures. This is so that cancer risk can be detected in relatively small groups of animals. It is not always clear if the results from animal studies will be the same for people as they are normally exposed to a substance. For example, the effects seen in lab studies with very high doses of a substance may not be the same at much lower doses, or the effects of a substance when it is inhaled may not be the same as if it is applied to the skin. Also, the bodies of lab animals and humans don't always process substances in the same way.

But for safety reasons, it is usually assumed that exposures that cause cancer at larger doses in animals may also cause cancer in people. It isn't always possible to know how the exposure dose might affect risk, but it is reasonable for public health purposes to assume that lowering human exposure will reduce risk.

Studies in people

Another important way to identify carcinogens is through epidemiologic studies, which look at human populations to determine which factors might be linked to cancer. These studies also provide useful information, but they have their limits. Humans do not live in a controlled environment. People are exposed to many substances at any given time, including those they encounter at work, school, or home; in the food they eat; and in the air they breathe. It's very unlikely they know exactly what they've been exposed to or that they would be able to remember all of their exposures if asked by a researcher. And there are usually many years (often decades) between exposure to a carcinogen and the development of cancer. Therefore, it can be very hard to definitely link any particular exposure to cancer.

By combining data from both types of studies, scientists do their best to make an educated assessment of a substance's cancer-causing ability. When the evidence is conclusive, the substance is labeled as a carcinogen. When the available evidence is compelling but not felt to be

conclusive, the substance may be considered to be a probable carcinogen. But in some cases there simply isn't enough information to be certain one way or the other.

Who determines how carcinogens are classified?

Several national and international agencies are responsible for determining the cancer-causing potential of different substances.

International Agency for Research on Cancer

The International Agency for Research on Cancer (IARC) is part of the World Health Organization (WHO). One of its major goals is to identify causes of cancer. The most widely used system for classifying carcinogens comes from the IARC. In the past 30 years, the IARC has evaluated the cancer-causing potential of more than 900 likely candidates, placing them into one of the following groups:

- Group 1: Carcinogenic to humans
- Group 2A: Probably carcinogenic to humans
- Group 2B: Possibly carcinogenic to humans
- Group 3: Unclassifiable as to carcinogenicity in humans
- Group 4: Probably not carcinogenic to humans

Perhaps not surprisingly, based on how hard it can be to test these candidate carcinogens, most are listed as being of probable, possible, or unknown risk. Only a little over 100 are classified as “carcinogenic to humans.”

National Toxicology Program

The National Toxicology Program (NTP) is formed from parts of several different US government agencies, including the National Institutes of Health (NIH), the Centers for Disease Control and Prevention (CDC), and the Food and Drug Administration (FDA). The NTP updates its *Report on Carcinogens* (RoC) every few years.

The *Report on Carcinogens* identifies 2 groups of agents:

- "Known to be human carcinogens"
- "Reasonably anticipated to be human carcinogens"

The current version of the RoC lists about 250 substances and exposures. Unlike the IARC's list, the RoC does not list substances that have been studied and found not to be carcinogens.

Environmental Protection Agency

The US Environmental Protection Agency (EPA) maintains the Integrated Risk Information System (IRIS), an electronic database that contains information on human health effects from exposure to certain substances in the environment. The EPA uses a rating system similar to that of IARC when describing the cancer-causing potential of a substance:

- Group A: Carcinogenic to humans
- Group B: Likely to be carcinogenic to humans
- Group C: Suggestive evidence of carcinogenic potential
- Group D: Inadequate information to assess carcinogenic potential
- Group E: Not likely to be carcinogenic to humans

Other agencies and groups

Other federal agencies, such as the CDC's National Institute for Occupational Safety and Health (NIOSH), the Food and Drug Administration (FDA), and the National Cancer Institute (NCI) may comment on whether a substance or exposure may cause cancer and/or what levels of exposure to a particular substance might be considered acceptable.

Some state agencies also keep lists of known or probable carcinogens. For example, the California Environmental Protection Agency (CalEPA) maintains a list of “chemicals known to the state to cause cancer or reproductive toxicity.” (Much of this list is based on the IARC and NTP lists below.)

The American Cancer Society’s role

The American Cancer Society (ACS) contributes in many ways to evaluating how environmental factors affect a person's likelihood of developing cancer, including:

- Conducting epidemiologic research on the causes of cancer
- Funding laboratory and epidemiologic research at universities and other institutions that study environmental causes of cancer
- Advocating for environmental health on local, state, and federal levels
- Informing the public about environmental factors that affect cancer risk and how to decrease their risk of developing cancer

In most cases, the ACS does not directly evaluate whether a certain substance or exposure causes cancer. Instead, the ACS looks to national and international organizations such as the NTP and IARC, whose mission is to evaluate environmental cancer risks based on evidence from laboratory and human research studies.

Some important points about the IARC and NTP lists here

The IARC and NTP act independently but have studied many of the same agents, so many known or suspected carcinogens appear on both lists. But because an agent appears on one and not on the other does not necessarily mean there is a controversy, as one agency may not have evaluated it.

Unfortunately, many of the substances and exposures on the lists below can often go by different names. This can make it hard to find a particular substance on one or both of these lists, which are in alphabetical order and may not always use the most common term.

These lists include only those agents that have been evaluated by the agencies. These agencies tend to focus on substances and exposures most likely to cause cancer, but there are many others that have not been studied fully yet.

Most of the agents on the lists have been linked only with certain kinds of cancer, not all types. For more detailed information, refer to the specific monographs or reports published by the agencies (available on their websites).

The lists describe *the level of evidence* that something can cause cancer, not how likely it is that something will cause cancer in any particular person. For example, IARC considers there to be strong evidence that both tobacco smoking and eating processed meat can cause cancer, so both are listed as “carcinogenic to humans.” But smoking is much more likely to cause cancer than eating processed meat, even though both are in the same category.

Carcinogens do not cause cancer at all times, under all circumstances. Some may only be carcinogenic if a person is exposed in a certain way (for example, swallowing it as opposed to touching it). Some may only cause cancer in people who have a certain genetic makeup. Some of these agents may lead to cancer after only a very small exposure, while others might require intense exposure over many years. Again, you should refer to the agencies’ reports for specifics.

Even if a substance or exposure is known or suspected to cause cancer, this does not necessarily mean that it can or should be avoided at all costs. For example, estrogen is a known carcinogen that occurs naturally in the body. Exposure to ultraviolet (UV) radiation from sunlight is also known to cause cancer, but it’s not practical (or advisable) to completely avoid the sun. These lists also include many commonly used medicines, particularly some hormones and drugs used to treat cancer. For example, tamoxifen increases the risk of certain kinds of uterine cancer but can be very useful in treating some breast cancers, which may be more important for some women. If you have questions about a medicine that appears on one of these lists, be sure to ask your doctor.

Looking at the list below can tell you whether or not something may increase your risk of cancer, but it is important to try to get an idea of how much it might increase your risk. It is also important to know what your risk is to begin with. Many factors can enter into this, including your age, gender, family history, and lifestyle factors (tobacco and alcohol use, weight, diet, physical activity level, etc.). As noted above, the type and extent of exposure to a substance may also play a role. You should consider the actual amount of increased risk when deciding if you should limit or avoid an exposure.

Known human carcinogens

International Agency for Research on Cancer
Group 1: Carcinogenic to humans

- Acetaldehyde (from consuming alcoholic beverages)
- Acheson process, occupational exposure associated with
- Acid mists, strong inorganic
- Aflatoxins
- Alcoholic beverages
- Aluminum production
- 4-Aminobiphenyl
- Areca nut
- Aristolochic acid (and plants containing it)
- Arsenic and inorganic arsenic compounds
- Asbestos (all forms) and mineral substances (such as talc or vermiculite) that contain asbestos
- Auramine production
- Azathioprine
- Benzene
- Benzidine and dyes metabolized to benzidine

- Benzo[a]pyrene
- Beryllium and beryllium compounds
- Betel quid, with or without tobacco
- Bis(chloromethyl)ether and chloromethyl methyl ether (technical-grade)
- Busulfan
- 1,3-Butadiene
- Cadmium and cadmium compounds
- Chlorambucil
- Chlornaphazine
- Chromium (VI) compounds
- *Clonorchis sinensis* (infection with), also known as the Chinese liver fluke
- Coal, indoor emissions from household combustion
- Coal gasification
- Coal-tar distillation
- Coal-tar pitch
- Coke production
- Cyclophosphamide
- Cyclosporine
- 1,2-Dichloropropane
- Diethylstilbestrol
- Engine exhaust, diesel
- Epstein-Barr virus (infection with)
- Erionite
- Estrogen postmenopausal therapy
- Estrogen-progestogen postmenopausal therapy (combined)
- Estrogen-progestogen oral contraceptives (combined) (Note: There is also convincing evidence in humans that these agents confer a protective effect against cancer in the endometrium and ovary)

- Ethanol in alcoholic beverages
- Ethylene oxide
- Etoposide
- Etoposide in combination with cisplatin and bleomycin
- Fission products, including strontium-90
- Fluoro-edenite fibrous amphibole
- Formaldehyde
- Haematite mining (underground)
- *Helicobacter pylori* (infection with)
- Hepatitis B virus (chronic infection with)
- Hepatitis C virus (chronic infection with)
- Human immunodeficiency virus type 1 (HIV-1) (infection with)
- Human papilloma virus (HPV) types 16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59 (infection with) (Note: The HPV types that have been classified as carcinogenic to humans can differ by an order of magnitude in risk for cervical cancer)
- Human T-cell lymphotropic virus type I (HTLV-1) (infection with)
- Ionizing radiation (all types)
- Iron and steel founding (workplace exposure)
- Isopropyl alcohol manufacture using strong acids
- Kaposi sarcoma herpesvirus (KSHV), also known as human herpesvirus 8 (HHV-8) (infection with)
- Leather dust
- Lindane
- Magenta production
- Melphalan
- Methoxsalen (8-methoxypsoralen) plus ultraviolet A radiation, also known as PUVA
- 4,4'-Methylenebis(chloroaniline) (MOCA)
- Mineral oils, untreated or mildly treated
- MOPP and other combined chemotherapy including alkylating agents

- 2-Naphthylamine
- Neutron radiation
- Nickel compounds
- N'-Nitrosonornicotine (NNN) and 4-(N-Nitrosomethylamino) -1-(3-pyridyl)-1-butanone (NNK)
- *Opisthorchis viverrini* (infection with), also known as the Southeast Asian liver fluke
- Outdoor air pollution (and the particulate matter in it)
- Painter (workplace exposure as a)
- 3,4,5,3',4'-Pentachlorobiphenyl (PCB-126)
- 2,3,4,7,8-Pentachlorodibenzofuran
- Phenacetin (and mixtures containing it)
- Phosphorus-32, as phosphate
- Plutonium
- Polychlorinated biphenyls (PCBs), dioxin-like, with a Toxicity Equivalency Factor according to WHO (PCBs 77, 81, 105, 114, 118, 123, 126, 156, 157, 167, 169, 189)
- Processed meat (consumption of)
- Radioiodines, including iodine-131
- Radionuclides, alpha-particle-emitting, internally deposited (Note: Specific radionuclides for which there is sufficient evidence for carcinogenicity to humans are also listed individually as Group 1 agents)
- Radionuclides, beta-particle-emitting, internally deposited (Note: Specific radionuclides for which there is sufficient evidence for carcinogenicity to humans are also listed individually as Group 1 agents)
- Radium-224 and its decay products
- Radium-226 and its decay products
- Radium-228 and its decay products
- Radon-222 and its decay products
- Rubber manufacturing industry

- Salted fish (Chinese-style)
- *Schistosoma haematobium* (infection with)
- Semustine (methyl-CCNU)
- Shale oils
- Silica dust, crystalline, in the form of quartz or cristobalite
- Solar radiation
- Soot (as found in workplace exposure of chimney sweeps)
- Sulfur mustard
- Tamoxifen (Note: There is also conclusive evidence that tamoxifen reduces the risk of contralateral breast cancer in breast cancer patients)
- 2,3,7,8-Tetrachlorodibenzo-para-dioxin
- Thiotepa
- Thorium-232 and its decay products
- Tobacco, smokeless
- Tobacco smoke, secondhand
- Tobacco smoking
- ortho-Toluidine
- Treosulfan
- Trichloroethylene
- Ultraviolet (UV) radiation, including UVA, UVB, and UVC rays
- Ultraviolet-emitting tanning devices
- Vinyl chloride
- Wood dust
- X- and Gamma-radiation

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- Aflatoxins
- Alcoholic beverage consumption
- 4-Aminobiphenyl
- Analgesic mixtures containing phenacetin
- Aristolochic acids
- Arsenic and inorganic arsenic compounds
- Asbestos
- Azathioprine
- Benzene
- Benzidine
- Beryllium and beryllium compounds
- Bis(chloromethyl) ether and technical-grade chloromethyl methyl ether
- 1,3-Butadiene
- 1,4-Butanediol dimethylsulfonate (also known as busulfan)
- Cadmium and cadmium compounds
- Chlorambucil
- 1-(2-Chloroethyl)-3-(4-methylcyclohexyl)-1-nitrosourea (MeCCNU)
- Chromium hexavalent compounds
- Coal tar pitches
- Coal tars
- Coke oven emissions
- Cyclophosphamide
- Cyclosporin A

- Diethylstilbestrol (DES)
- Dyes metabolized to benzidine
- Epstein-Barr virus (EBV)
- Erionite
- Estrogens, steroidal
- Ethylene oxide
- Formaldehyde
- Hepatitis B virus
- Hepatitis C virus
- Human immunodeficiency virus type 1 (HIV-1)
- Human papilloma viruses: some genital-mucosal types
- Human T-cell lymphotropic virus type 1 (HTLV-1)
- Kaposi sarcoma-associated herpesvirus (KSHV) (also know as human herpesvirus 8, or HHV-8)
- Melphalan
- Merkel cell polyomavirus (MCV)
- Methoxsalen with ultraviolet A therapy (PUVA)
- Mineral oils (untreated and mildly treated)
- Mustard gas
- 2-Naphthylamine
- Neutrons
- Nickel compounds
- Oral tobacco products
- Radon
- Silica, crystalline (respirable size)
- Solar radiation
- Soots
- Strong inorganic acid mists containing sulfuric acid
- Sunlamps or sunbeds, exposure to

- Tamoxifen
- 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD); "dioxin"
- Thiotepa
- Thorium dioxide
- Tobacco smoke, environmental
- Tobacco, smokeless
- Tobacco smoking
- o-Toluidine
- Trichloroethylene (TCE)
- Vinyl chloride
- Ultraviolet (UV) radiation, broad spectrum
- Wood dust
- X-radiation and gamma radiation

Probable carcinogens

International Agency for Research on Cancer
Group 2A: Probably carcinogenic to humans

- Acrylamide
- Adriamycin (doxorubicin)
- Androgenic (anabolic) steroids
- Art glass, glass containers, and press ware (manufacture of)
- Azacitidine
- Biomass fuel (primarily wood), emissions from household combustion
- Bischloroethyl nitrosourea (BCNU), also known as carmustine

- Captafol
- Carbon electrode manufacture
- Chloral
- Chloral hydrate
- Chloramphenicol
- alpha-Chlorinated toluenes (benzal chloride, benzotrichloride, benzyl chloride) and benzoyl chloride (combined exposures)
- 1-(2-Chloroethyl)-3-cyclohexyl-1-nitrosourea (CCNU)
- 4-Chloro-ortho-toluidine
- Chlorozotocin
- Cisplatin
- Cobalt metal with tungsten carbide
- Creosotes
- Cyclopenta[cd]pyrene
- DDT (4,4'-Dichlorodiphenyltrichloroethane)
- Diazinon
- Dibenz[a,j]acridine
- Dibenz[a,h]anthracene
- Dibenzo[a,l]pyrene
- Dichloromethane (methylene chloride)
- Diethyl sulfate
- Dimethylcarbamoyl chloride
- 1,2-Dimethylhydrazine
- Dimethyl sulfate
- Epichlorohydrin
- Ethyl carbamate (urethane)
- Ethylene dibromide
- N-Ethyl-N-nitrosourea
- Frying, emissions from high-temperature

- Glycidol
- Glyphosate
- Hairdresser or barber (workplace exposure as)
- Human papillomavirus (HPV) type 68 (infection with)
- Indium phosphide
- IQ (2-Amino-3-methylimidazo[4,5-f]quinoline)
- Lead compounds, inorganic
- Malaria (caused by infection with *Plasmodium falciparum*)
- Malathion
- Merkel cell polyomavirus (MCV)
- 5-Methoxypsoralen
- Methyl methanesulfonate
- N-Methyl-N´-nitro-N-nitrosoguanidine (MNNG)
- N-Methyl-N-nitrosourea
- Nitrate or nitrite (ingested) under conditions that result in endogenous nitrosation
- 6-Nitrochrysene
- Nitrogen mustard
- 1-Nitropyrene
- N-Nitrosodiethylamine
- N-Nitrosodimethylamine
- 2-Nitrotoluene
- Non-arsenical insecticides (workplace exposures in spraying and application of)
- Petroleum refining (workplace exposures in)
- Pioglitazone
- Polybrominated biphenyls (PBBs)
- Procarbazine hydrochloride
- 1,3-Propane sultone
- Red meat (consumption of)

- Shiftwork that involves circadian disruption
- Silicon carbide whiskers
- Styrene-7,8-oxide
- Teniposide
- Tetrachloroethylene (perchloroethylene)
- Tetrafluoroethylene
- Trichloroethylene
- 1,2,3-Trichloropropane
- Tris(2,3-dibromopropyl) phosphate
- Very hot beverages (above 65 degrees Celsius)
- Vinyl bromide (Note: For practical purposes, vinyl bromide should be considered to act similarly to the human carcinogen vinyl chloride.)
- Vinyl fluoride (Note: For practical purposes, vinyl fluoride should be considered to act similarly to the human carcinogen vinyl chloride.)

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- Acetaldehyde
- 2-Acetylaminofluorene
- Acrylamide
- Acrylonitrile
- Adriamycin® (doxorubicin hydrochloride)
- 2-Aminoanthraquinone
- o-Aminoazotoluene
- 1-Amino-2,4-dibromoanthraquinone
- 1-Amino-2-methylanthraquinone

- 2-Amino-3,4-dimethylimidazo[4,5-f]quinoline (MeIQ)
- 2-Amino-3,8-dimethylimidazo[4,5-f]quinoxaline (MeIQx)
- 2-Amino-3-methylimidazo[4,5-f]quinoline (IQ)
- 2-Amino-1-methyl-6-phenylimidazo[4,5-b]pyridine (PhIP)
- Amitrole
- o-Anisidine and its hydrochloride
- Azacitidine (5-Azacytidine®, 5-AzaC)
- Basic Red 9 Monohydrochloride
- Benz[a]anthracene
- Benzo[b]fluoranthene
- Benzo[j]fluoranthene
- Benzo[k]fluoranthene
- Benzo[a]pyrene
- Benzotrichloride
- 2, 2-bis-(bromoethyl)-1,3-propanediol (technical grade)
- Bromodichloromethane
- 1-Bromopropane
- Butylated hydroxyanisole (BHA)
- Captafol
- Carbon tetrachloride
- Ceramic fibers (respirable size)
- Chloramphenicol
- Chlorendic acid
- Chlorinated paraffins (C_{12}, 60% chlorine)
- Chloroform
- 1-(2-chloroethyl)-3-cyclohexyl-1-nitrosourea
- Bis(chloroethyl) nitrosourea
- 3-Chloro-2-methylpropene
- 4-Chloro-o-phenylenediamine

- Chloroprene
- p-Chloro-o-toluidine and p-chloro-o-toluidine hydrochloride
- Chlorozotocin
- Cisplatin
- Cobalt and cobalt compounds that release cobalt ions in vivo
- Cobalt-tungsten carbide: powders and hard metals
- p-Cresidine
- Cumene
- Cupferron
- Dacarbazine
- Danthron (1,8-dihydroxyanthraquinone)
- 2,4-Diaminoanisole sulfate
- 2,4-Diaminotoluene
- Diazoaminobenzene
- Dibenz[a,h]acridine
- Dibenz[a,j]acridine
- Dibenz[a,h]anthracene
- 7H-Dibenzo[c,g]carbazole
- Dibenzo[a,e]pyrene
- Dibenzo[a,h]pyrene
- Dibenzo[a,i]pyrene
- Dibenzo[a,l]pyrene
- 1,2-Dibromo-3-chloropropane
- 1,2-Dibromoethane (ethylene dibromide)
- 2,3-Dibromo-1-propanol
- Tris (2,3-dibromopropyl) phosphate
- 1,4-Dichlorobenzene
- 3,3'-Dichlorobenzidine and 3,3'-dichlorobenzidine dihydrochloride
- Dichlorodiphenyltrichloroethane (DDT)

- 1,2-Dichloroethane (ethylene dichloride)
- Dichloromethane (methylene chloride)
- 1,3-Dichloropropene (technical grade)
- Diepoxybutane
- Diesel exhaust particulates
- Diethyl sulfate
- Diglycidyl resorcinol ether
- 3,3'-Dimethoxybenzidine
- 4-Dimethylaminoazobenzene
- 3,3'-Dimethylbenzidine
- Dimethylcarbamoyl chloride
- 1,1-Dimethylhydrazine
- Dimethyl sulfate
- Dimethylvinyl chloride
- 1,6-Dinitropyrene
- 1,8-Dinitropyrene
- 1,4-Dioxane
- Disperse blue 1
- Dyes metabolized to 3,3'-dimethoxybenzidine
- Dyes metabolized to 3,3'-dimethylbenzidine
- Epichlorohydrin
- Ethylene thiourea
- Ethyl methanesulfonate
- Furan
- Glass wool fibers (inhalable)
- Glycidol
- Hexachlorobenzene
- Hexachlorocyclohexane isomers
- Hexachloroethane

- Hexamethylphosphoramide
- Hydrazine and hydrazine sulfate
- Hydrazobenzene
- Indeno[1,2,3-cd]pyrene
- Iron dextran complex
- Isoprene
- Kepone® (chlordecone)
- Lead and lead compounds
- Lindane, hexachlorocyclohexane
- 2-Methylaziridine (propylenimine)
- 5-Methylchrysene
- 4,4'-Methylenebis(2-chloroaniline)
- 4-4'-Methylenebis(N,N-dimethyl)benzenamine
- 4,4'-Methylenedianiline and its dihydrochloride salt
- Methyleugenol
- Methyl methanesulfonate
- N-methyl-N'-nitro-N-nitrosoguanidine
- Metronidazole
- Michler's ketone [4,4'-(dimethylamino) benzophenone]
- Mirex
- Naphthalene
- Nickel, metallic
- Nitrilotriacetic acid
- o-Nitroanisole
- Nitrobenzene
- 6-Nitrochrysene
- Nitrofen (2,4-dichlorophenyl-p-nitrophenyl ether)
- Nitrogen mustard hydrochloride
- Nitromethane

- 2-Nitropropane
- 1-Nitropyrene
- 4-Nitropyrene
- N-nitrosodi-n-butylamine
- N-nitrosodiethanolamine
- N-nitrosodiethylamine
- N-nitrosodimethylamine
- N-nitrosodi-n-propylamine
- N-nitroso-N-ethylurea
- 4-(N-nitrosomethylamino)-1-(3-pyridyl)-1-butanone
- N-nitroso-N-methylurea
- N-nitrosomethylvinylamine
- N-nitrosomorpholine
- N-nitrosonornicotine
- N-nitrosopiperidine
- N-nitrosopyrrolidine
- N-nitrososarcosine
- o-Nitrotoluene
- Norethisterone
- Ochratoxin A
- 4,4'-Oxydianiline
- Oxymetholone
- Pentachlorophenol and by-products of its synthesis
- Phenacetin
- Phenazopyridine hydrochloride
- Phenolphthalein
- Phenoxybenzamine hydrochloride
- Phenytoin and phenytoin sodium
- Polybrominated biphenyls (PBBs)

- Polychlorinated biphenyls (PCBs)
- Polycyclic aromatic hydrocarbons (PAHs)
- Procarbazine and its hydrochloride
- Progesterone
- 1,3-Propane sultone
- beta-Propiolactone
- Propylene oxide
- Propylthiouracil
- Reserpine
- Riddelliine
- Safrole
- Selenium sulfide
- Streptozotocin
- Styrene
- Styrene-7,8-oxide
- Sulfallate
- Tetrachloroethylene (perchloroethylene)
- Tetrafluoroethylene
- Tetranitromethane
- Thioacetamide
- 4,4'-Thiodianaline
- Thiourea
- Toluene diisocyanates
- Toxaphene
- 2,4,6-Trichlorophenol
- 1,2,3-Trichloropropane
- Tris(2,3-dibromopropyl) phosphate
- Ultraviolet A radiation
- Ultraviolet B radiation

- Ultraviolet C radiation
- Urethane
- Vinyl bromide
- 4-Vinyl-1-cyclohexene diepoxide
- Vinyl fluoride

Written by Additional resources References

The American Cancer Society medical and editorial content team

(/cancer/acs-medical-content-and-news-staff.html)Our team is made up of doctors and master's-prepared nurses with deep knowledge of cancer care as well as journalists, editors, and translators with extensive experience in medical writing.

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